

## CLAIMS

1. A power management integrated circuit comprising:  
a plurality of input terminals adapted to receive analog input voltage signals;  
a plurality of analog input monitor circuits coupled to the input terminals, each  
5 analog input monitor circuit operable to compare an input analog voltage received at  
an input terminal against at least one voltage reference;  
control logic coupled to the plurality of analog input monitor circuits and  
operable to generate at least one control signal in response to output signals from  
the analog input monitor circuits; and  
10 at least one driver circuit coupled between the control logic and an output  
terminal and capable of controlling a power switch, the driver circuit operable in  
response to a control signal from the control logic.
2. The integrated circuit of claim 1, wherein at least one analog input monitor  
15 circuit is operable to compare an input analog voltage against high and low voltage  
references.
3. The integrated circuit of claim 1, wherein at least one analog input monitor  
circuit is operable to compare a first input analog voltage received at a first input  
20 terminal to a second input analog voltage received at a second input terminal.
4. The integrated circuit of claim 1, wherein at least one analog input monitor  
circuit is operable to monitor the voltage across an external resistor, and the control  
logic is operable to generate an indicator signal in response to the output signal from  
25 the analog input monitor circuit.
5. The integrated circuit of claim 1 including a programmable voltage reference  
generator.
- 30 6. The integrated circuit of claim 1 including a plurality of driver circuits, wherein  
the control logic is operable to generate a plurality of control signals for the plurality  
of driver circuits in response to output signals from the analog input monitor circuits.

7. The integrated circuit of claim 6, wherein the control logic is operable to generate control signals that sequentially operate the driver circuits.
8. The integrated circuit of claim 1, wherein the control logic is programmable.
9. The integrated circuit of claim 8, wherein the control logic includes a plurality of macrocells.
10. The integrated circuit of claim 1, wherein the driver circuit is programmable.
11. The integrated circuit of claim 1 including a charge pump circuit coupled to the driver circuit.
12. The integrated circuit of claim 1, wherein the driver circuit comprises an FET driver circuit capable of driving a power MOSFET switch coupled to the output terminal.
13. The integrated circuit of claim 1 including a serial interface coupled to the control logic and operable to support the I<sup>2</sup>C protocol.
14. The integrated circuit of claim 1 including nonvolatile programmable memory operable to store information for configuring a programmable portion of the power management integrated circuit.
15. The integrated circuit of claim 1 including a watchdog timer coupled to the control logic and operable to monitor a time-based event.
16. A power management integrated circuit comprising:
  - at least one input terminal adapted to receive an analog input voltage signal;
  - at least one analog input monitor circuit coupled to the input terminal, the analog input monitor circuit operable to compare an input analog voltage received at the input terminal against at least one voltage reference;

control logic coupled to the at least one input monitor circuit and operable to generate a plurality of control signals in response to an output signal from the at least one analog input monitor circuit; and

5 a plurality of driver circuits coupled between the control logic and a plurality of output terminals and capable of controlling a power switch, each driver circuit operable in response to a control signal from the control logic.

10 17. The integrated circuit of claim 16, wherein the control logic is operable to generate control signals that sequentially operate the driver circuits.

18. A method of managing the providing of power from multiple power supplies to an electronic device, the method comprising:

15 receiving analog input signals from at least two power supplies;  
comparing each analog input signal to at least one voltage reference; and  
based on the comparing of each analog input signal to the at least one voltage reference, controlling a plurality of power switches, the power switches operable to couple the power supplies to the electronic device.

20 19. The method of claim 18, wherein controlling the power switches includes closing the switches simultaneously.

20. The method of claim 19, wherein controlling the power switches includes sending a same control signal to each power switch.

25 21. The method of claim 18, wherein controlling the power switches includes closing the switches sequentially.

22. The method of claim 21, wherein controlling the power switches includes sending a different control signal to each power switch.

30 23. The method of claim 18, wherein each analog input signal is compared to high and low voltage references.

24. The method of claim 18, wherein the voltage reference is provided by a programmable voltage reference generator.